AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of selecting at least one routing path between an access node and at least one of a plurality of gateways comprising:

~~each~~ at least one gateway originating and simultaneously broadcasting beacons from a plurality of radios over a plurality of channels, each channel different from other of the plurality of channels, at least one radio broadcasting the beacons over a corresponding one of the plurality of channels, the beacons being broadcast over each of the plurality of channels at a predetermined rate;

the access node simultaneously receiving over a plurality of channels with a plurality of access node radios, at least one access node radio corresponding with each of the plurality of channels, beacons from at least one upstream access node or gateway, the beacons providing information of selected upstream paths between each of the upstream access nodes and the plurality of gateways; and

the access node selecting a routing path between the access node and at least one of the plurality of gateways, based on a persistence of successfully received beacons, the selected routing path including multiple different channels;

the access node simultaneously re-broadcasting beacons with the plurality of access node radios, the re-broadcast beacons corresponding to the selected routing path, over each of the plurality of channels, the rebroadcast beacons modified by the access node to include information of the selected routing path.

2. (Previously Presented) The method of claim 1, wherein the plurality of channels comprises transmission channels according to at least two of 802.11(a), 802.11(b), 802.11(g), 802.11(n) transmission protocols.

3. (Cancel) The method of claim 1, wherein the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criteria.

4. (Previously Presented) The method of claim 1, wherein the selection criteria is additionally based upon an information throughput of the routing paths.

5. (Previously Presented) The method of claim 1, wherein the selection criteria is additionally based upon a number of hops of the routing paths.

6. (Cancel)

7. (Cancel)

8. (Cancel)

9. (Currently Amended) The method of claim 1, wherein beacons that are successfully received by the upstream access nodes are rebroadcast by the upstream access nodes over multiple different channels after the beacons have been modified to include selected upstream routing information of the upstream access nodes.

10. (Cancel)

11. (Currently Amended) The method of claim 1, wherein selected upstream paths between each upstream access node and upstream gateways includes a combination of paths, over multiple different channels, and upstream paths are selected based on a persistence of successfully received broadcast and rebroadcast beacons.

12. (Original) The method of claim 1, wherein selected upstream paths between each upstream access node and upstream gateways are selected based upon path quality.

13. (Original) The method of claim 12, wherein the path quality is determined by an information throughput of the upstream paths.

14. (Original) The method of claim 12, wherein the path quality is determined by a number of hops included within the upstream paths.

15. (Previously Presented) The method of claim 1, further comprising the access node transmitting a modified beacon over a plurality of channels, the modified beacon including the optimal set of routing paths between the access node and the at least one upstream gateway.

16. (Original) The method of claim 1, further comprising:

sending a reverse beacon to the gateway; and

constructing a client tree in the gateway, wherein the gateway has at least one path including multiple channels to all clients.

17. (Currently amended) A method of routing data packets through a wireless mesh network, the mesh network comprising at least one gateway and a plurality of access nodes, the method comprising:

each gateway originating and simultaneously broadcasting beacons with a plurality of radios over a plurality of channels, the beacons being broadcast by each of the radios over each of the plurality of channels at a predetermined rate;

each access node simultaneously receiving over a plurality of channels, beacons over a plurality of radios from at least one upstream device;

if the at least one upstream device is an upstream access node, the indicators providing information of selected upstream paths between each of the upstream access nodes and upstream gateways; and

each access node determining an optimal set of routing paths between the access node and at least one upstream gateway, based upon a persistence of successfully received indicators, the optimal set of routing paths including a combination of paths over multiple channels.

18. (Original) The method of claim 17, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n) transmission protocols.

19. (Cancel)

20. (Cancel)

21. (Previously Presented) The method of claim 17, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.

22. (Original) The method of claim 17, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.

23. (Previously Presented) The method of claim 17, further comprising the access node transmitting a modified beacons over a plurality of channels, the

modified beacons including the selected routing path between the access node and the at least one upstream gateway.

24. (Original) The method of claim 17, further comprising

sending a reverse beacon to the gateway; and

constructing a client tree in the gateway, wherein the gateway has at least one path including multiple channels to all clients.

25. (Currently amended) An access node comprising:

a plurality of radios operable on a plurality of transmission channels, the radios simultaneously receiving over each of a plurality of channels, indicators from at least one upstream access node, the indicators providing information of selected upstream paths between each of the upstream access nodes and upstream gateways; and

means for determining an optimal set of routing paths between the access node and at least one upstream gateway, based upon a persistence of successfully received indicators, the optimal set of routing paths including a combination of paths over multiple channels.

26. (Previously Presented) The access node of claim 25, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n) transmission protocols.

27. (Cancel)

28. (Previously presented) The access node of claim 25, wherein the indicators comprise beacons originating at the upstream gateways.

29. (Previously presented) The access node of claim 28, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.

30. (Previously presented) The access node of claim 25, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.

31. (Previously presented) The access node of claim 25, further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway.

32. (Currently amended) A mesh network comprising:

at least one gateway, each gateway simultaneously transmitting beacons with a plurality of radios through each of a plurality of transmission channels at a predetermined rate;

a plurality of access nodes, each access node simultaneously receiving beacons over a plurality of radios, through at least one of the transmission channels, each access node selecting routing paths based upon a persistence of successfully received beacons, the routing paths selected from the plurality of transmission channels, the selected set of routing paths including a combination of paths over multiple channels; and

a client, the client receiving beacons through at least one of the transmission channels from at least one of the access nodes.

33. (Previously presented) The mesh network of claim 32, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n) transmission protocols.

34. (Previously presented) The mesh network of claim 32, wherein the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criteria.

35. (Previously presented) The mesh network of claim 32, wherein the indicators comprise beacons originating at the gateways.

36. (Previously presented) The mesh network of claim 35, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.

37. (Previously presented) The mesh network of claim 32, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.

38. (Previously presented) The mesh network of claim 32, further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway.

39. (Currently Amended) The method of claim 1, wherein the access node simultaneously re-broadcasting beacons corresponding to the selected routing path, over each of the plurality of channels comprises:

the access node adjusting a link quality and path quality associated with the received beacons based on whether beacons are received within a routing cycle;

the access node retransmitting modified beacons over each of the plurality of channels if the path quality is above a threshold.